INTERVIEW

ROB HOLTACKERS

The racing scientist

Rob Holtackers' scientific career already shifted into top gear when he was still a PhD candidate. So after he had defended his PhD with *cum laude* distinction, there was no reason to delay writing a Veni application. His CV was already impressive, and his research proposal proved to be too. An interview about performing while a deadline is looming, "the most wonderful imaging technology" (MRI), and fast cars. Because, let's not forget, he is not only a scientist but also runs his own company organising sports car events.

When the e-mail from NWO (Dutch Research Council) came in, announcing whether he had been awarded the Veni grant or not, the first thing Rob did was to close his mailbox again. He was busy with something else, and felt it was not the right moment. It wasn't until a few hours later that he opened the email, first checking the second paragraph – "That's where you find the real information" – and read that he had been awarded the grant. With these funds he will further explore the treatment of cardiac arrhythmias while the patient is lying inside an MRI scanner, a new form of ablation therapy which he successfully implemented together with a team of colleagues in Maastricht.

VENI PROPOSAL

During ablation therapy, a catheter is used to burn specific 'points' in the heart muscle tissue from the inside to block the electrical impulses that cause the arrhythmia. Carrying out this procedure in an MRI scanner enables detailed imaging of the heart and the treated tissue, both during and immediately after the therapy. "Wouldn't it be great if we could use these MRI images to predict, already during the procedure, whether the performed therapy will have the desired effect in the long term, by looking at the properties and state of the ablated tissue? That's what I hope to investigate with the help of this Veni grant."

THIS IS A PERFECT EXAMPLE OF AN EVERYDAY CLINICAL PROBLEM FOR WHICH A RAPID, EASILY IMPLEMENTABLE SOLUTION WAS FOUND

By making additional MRI scans of the heart at three and twelve months following the intervention, researchers can evaluate, in both successfully and unsuccessfully treated patients, what state the heart is in, how the tissue has recovered, and hence, what effect the ablation therapy has had on the cardiac tissue. "We would expect to see patterns – so-called imaging markers – which allow us to better understand the MRI images made immediately after therapy. We can then use these images to adjust and steer the ablation therapy already during the procedure, for instance by burning additional areas or burning the same areas again but then more thoroughly. Ultimately, we want more patients to undergo an ablation therapy that is successful the first time and thus not have to come back for further follow-up treatment."

STAGNATION IS EXASPERATING

It is a great example of the type of research that gets Rob going. No wonder then that the Biomedical Engineering programme he attended at Eindhoven University of Technology fitted him like a glove. The programme focused mostly on technology, with just a small medical component, which taught him to solve clinical problems in medical care by technological means, using his biomedical knowledge. He is driven by the ambition to help medical staff improve their work, and thereby improve the outcome of treatment for patients, preferably as soon as possible.

IT MAY SOUND CLICHÉ, BUT GET GOING IN TIME

In the final stages of his master's programme 'Medical Engineering', he did an internship at King's College London where he focused on better visualising scar tissue in the heart using MRI. The work yielded promising results, but the project was unfinished and was put on the back burner for a while. After his graduation, when he started his PhD project at Maastricht, the first 18 months were rather slow going. "The project was very ambitious, so it took a lot of time to get off the ground, and prospects were limited. I found that very frustrating, because if things show only little progress for months beyond my own control, I feel useless and would rather move on to something else. But of course, that's easier said than done during a PhD. I was then given permission to return to London for a few months to continue working on the project I had done during my internship. The discovery I made there changed my entire PhD track and eventually became the basis of my thesis."

COMBINED PHD CANDIDATE AND POSTDOC

Briefly, Rob developed a new method to distinguish between healthy cardiac tissue, blood and scar tissue to improve the visibility of small infarcts on cardiac MRI scans. The solution is so 'simple' that it is now being applied in numerous hospitals all over the world. This is a perfect example of an everyday clinical problem for which a rapid, easily implementable solution was found: the fact that clinicians are now able to detect even minute areas of scar tissue, and can determine their size and precise location, has made it possible to tailor diagnosis and potential treatment better to each patient. His thesis earned him, among others, the 2022 Frederik Philips Award for the best PhD thesis in Radiology, as well as the CARIM Dissertation Award for the best PhD thesis within CARIM.

In addition, Rob was offered a half-time research staff position at the Department of Radiology and Nuclear Medicine at a time when he was only 1.5 years into his PhD project. When his PhD contract ended in late 2019, this was converted to a full-time position even before he had received his doctorate. So, once he had finally defended his thesis after the COVID pandemic in early 2022, he saw no reason why he should delay applying for a Veni grant, "I wanted to make it clear that I showed initiative."

A TIP HE CAN ALSO TAKE TO HEART HIMSELF

One learning point for him in this lengthy application process is also a tip he would like to pass on to others: It may sound cliché, but get going in time. He is actually not very good at that himself. "I perform best under pressure." So, if you then find yourself in a hotel room somewhere in the US in the middle of the night trying to submit a proposal on the NWO website, three minutes before the deadline, and the submission system lets you down, that's a rather nerve-racking situation. Or if you have to put pressure on your closest colleagues to please have a look at your proposal at extremely short notice, preferably there and then. "One colleague gave me really useful feedback, but unfortunately it was after the deadline, which was a great shame. Another

tip: also approach colleagues beyond your own field of expertise for feedback, as often there's no-one from your specific discipline in the NWO jury, which leads to a totally different type of questions."

And finally: make use of the expertise of the FHML Grants Office. "The presentation skills training I had there made me do a complete overhaul of my presentation, making its structure so much better." In the end, applying for these grants is also a kind of 'jury sport', he realises. "You need a bit of luck too."

PAT ON THE BACK

Luck is something he has had plenty of so far. In recent years, he received not only the Veni grant, but also a Kootstra Talent Fellowship and a Niels Stensen Fellowship to do research abroad for a year. The Kootstra fellowship ended when he was awarded the Veni grant; the Stensen one has enabled him to work in Switzerland, where he is staying at the time of this interview. "I'm doing an exciting project on a brand-new 0.55 T (low-field) MRI scanner. The question is whether the current technology still enables us to produce high-quality images using an 0.55 Tesla scanner, a type of instrument we discarded 25 or 30 years ago, together with all the practical advantages of low-field."

He loves being able to switch between various projects, and the freedom to structure his work the way he prefers. "But I'll never just assume that things will always continue to run as smoothly with the grant applications as they do now. Competition is fierce, so I give one hundred percent each day. I regard being awarded such a grant not merely as a pat on the back to say I'm doing well, but mostly as proof that you're apparently doing something good for society. There's a need for it, and that's what matters most to me."

CAR ENTHUSIAST

The ultimate break-away from his scientific work is probably his own company, 'Wheels of Thrill'. "I'm a bit of a car enthusiast", he says with a sense of understatement. "I organise sports car events throughout Europe and, as of this year, also beyond. We have a rally event about six times a year, exploring the more attractive roads and landscapes with a maximum of twenty sports cars, for a weekend or even a week. We stay in charming hotels and enjoy great food. I take care of everything, from planning the entire route to booking all the hotels and restaurants, and from creating personalised name tags to arranging 'money-can't-buy' experiences. I do this for our 'own' group, with which we started back in 2016, but also on request from companies, which might, for instance, want to offer their customers an adventurous tour of the Swiss Alps. I regard it as a great combination, but also as a diversion that gives me a lot of fresh energy. As long as I manage to combine the two, I'll remain the 'racing scientist'."